



Toyota Supplier Support Program for Energy Reduction

**Opportunity Exchange Seminar:
November 10th, 2008**

**Toyota Engineering & Manufacturing
North America, Inc. (TEMA)**

Bruce Bremer – Facilities Engineering





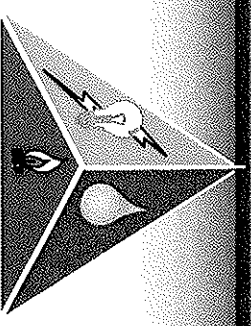
Presentation Preview

- TEMA Energy Program
- TEMA Energy Footprint
- Supplier Energy Program Goals
- Supplier Treasure Hunts (TH)
- Last Year's Reflection
- Current Activity Plan & Results

TEMA Energy Program

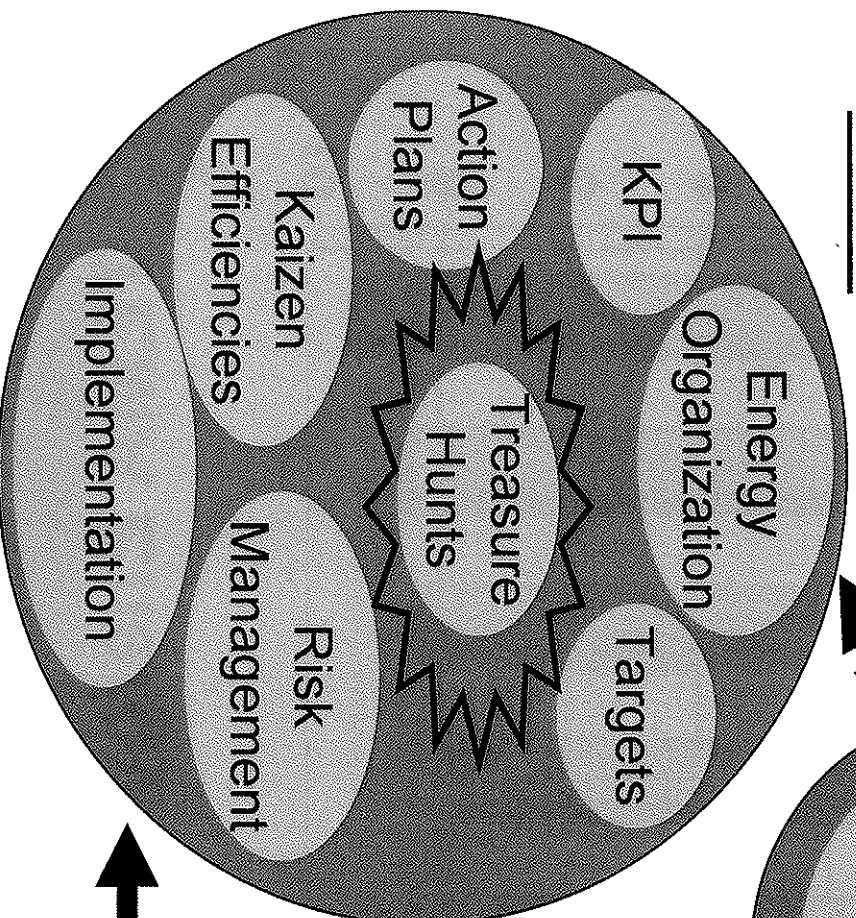
Support

3 Key Elements:

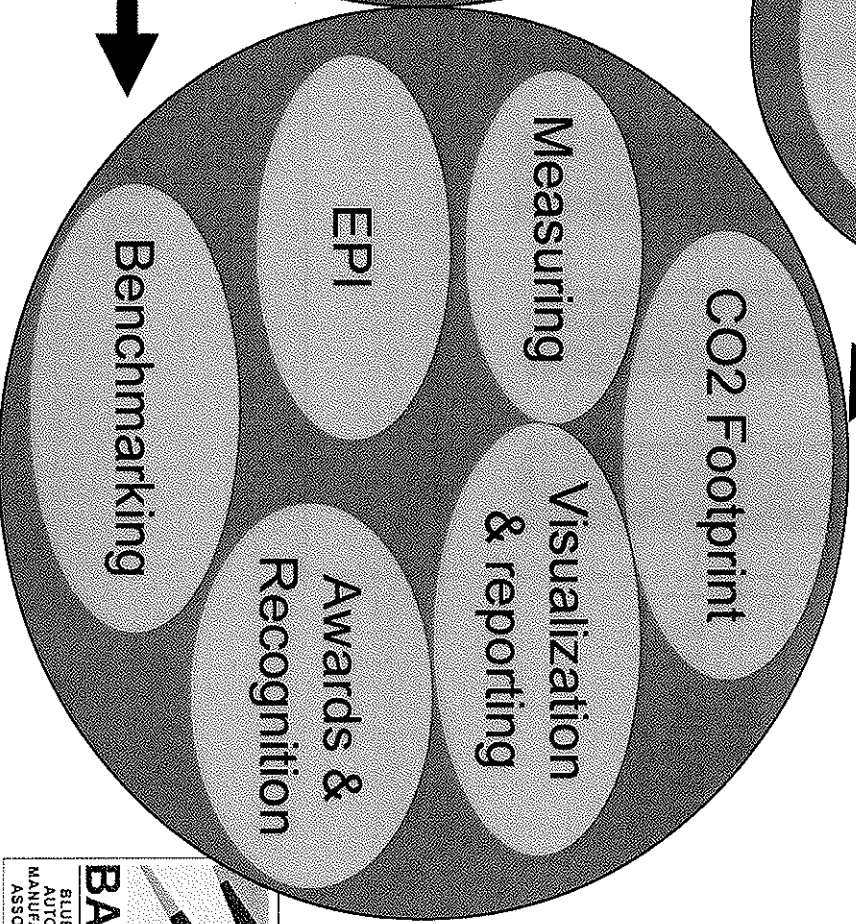


Toyota Energy Team
E M O

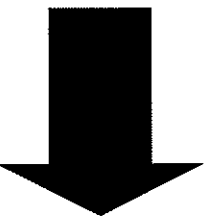
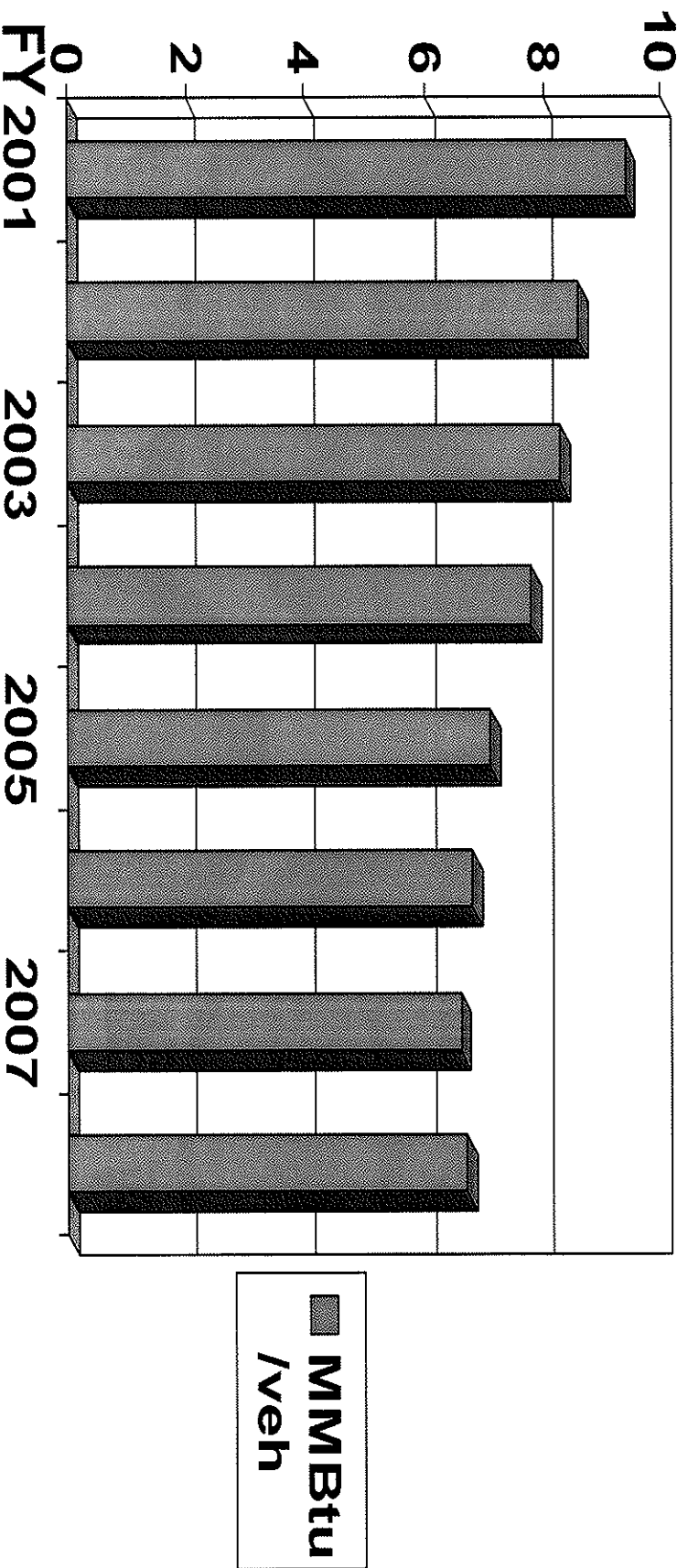
Tools



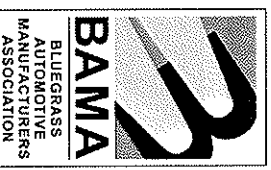
Measurements



TEMA Energy Program



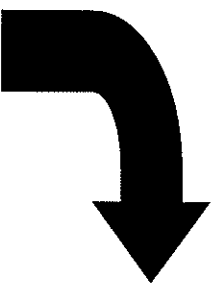
22% Energy Reduction
18% CO2 Reduction



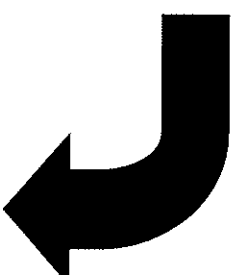


TEMA Energy Footprint

What is the Energy Life Cycle of our Product?



Manufacturing:
Production &
Transportation

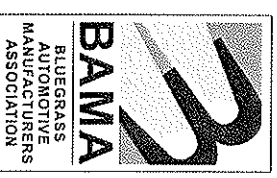


Parts Suppliers:
Production &
Transportation

Consumer:
Use &
End of Life



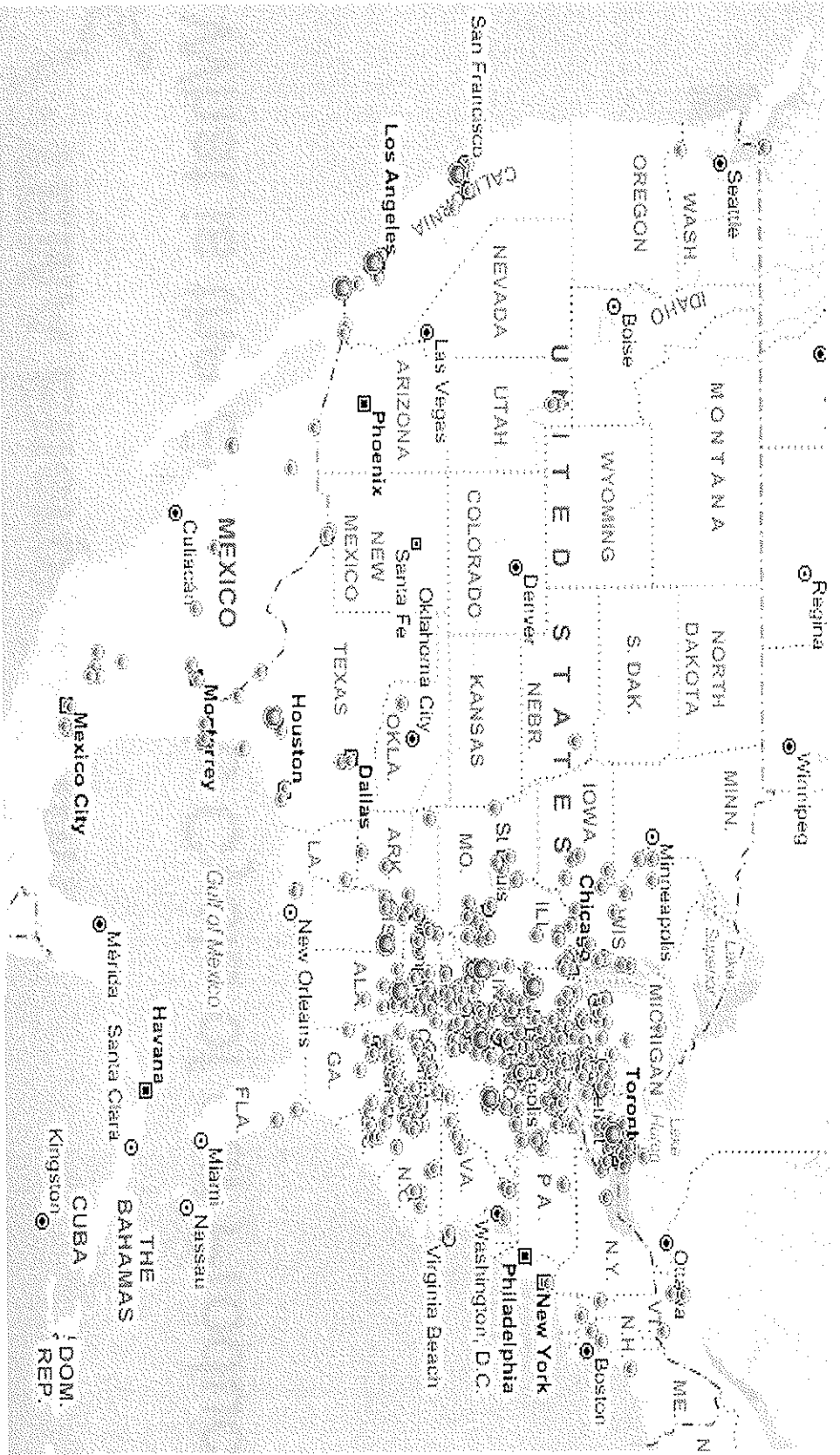
Reduce CO₂ in all aspects of our Product





TEMA Energy Footprint

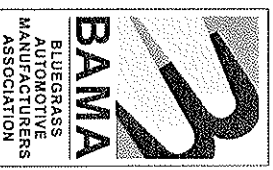
Toyota Suppliers in North America



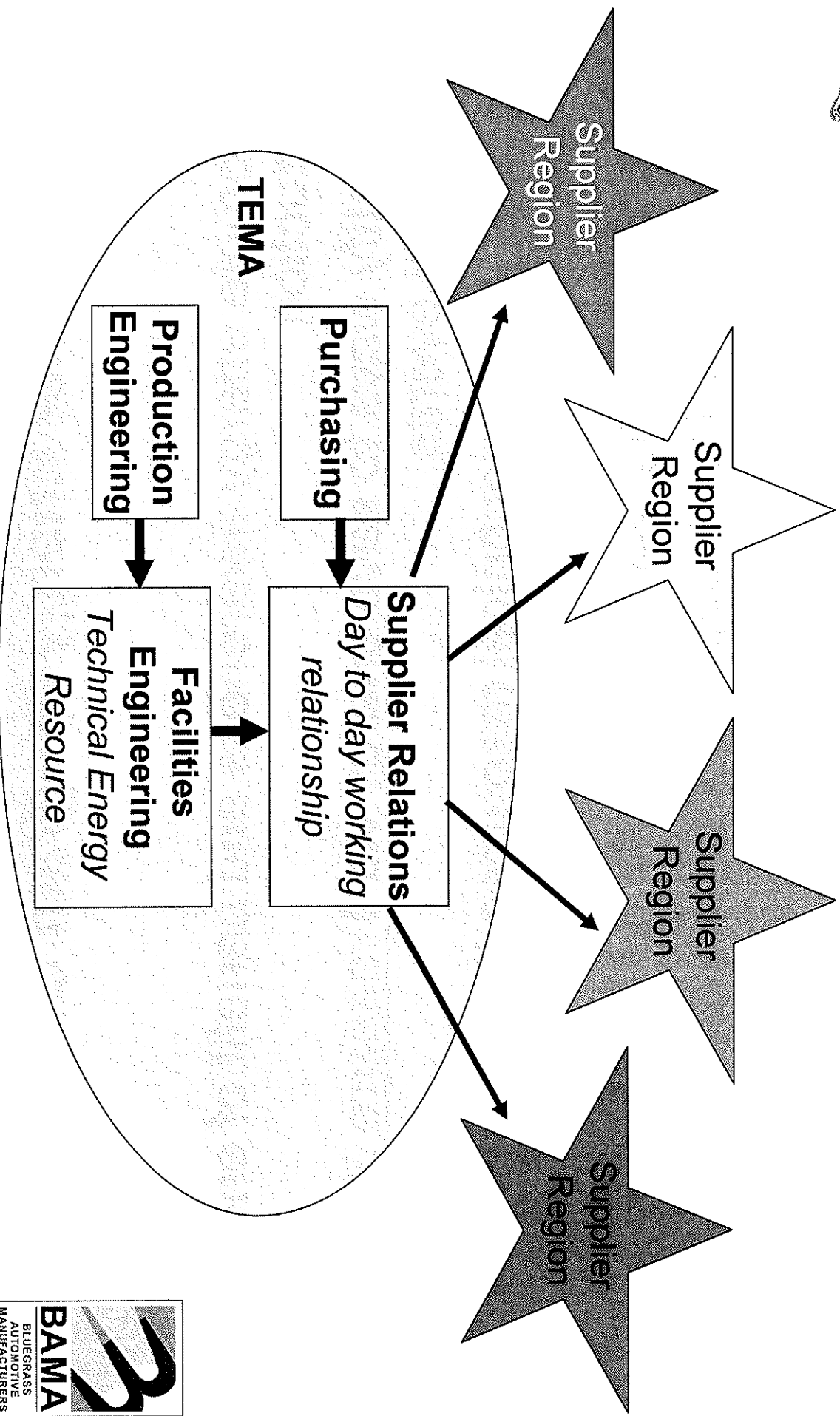


Supplier Energy Program Goals

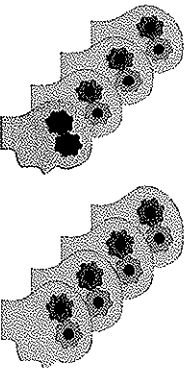
- Promote energy awareness and benefit of energy reduction
- Identify ways to save energy via Treasure Hunt training events
- Share energy technical resources through BAMA website
- Maintain strong Supplier-Toyota relationship
- Understand Tier 1 Supplier CO2 footprint contribution



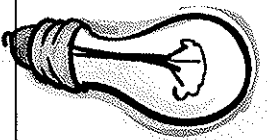
TEMA Supplier Energy Program



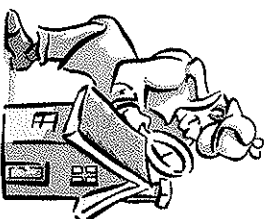
Purpose of Treasure Hunt Tool:



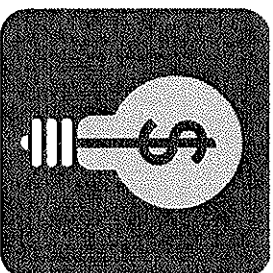
Combine knowledge of
T/Ms (TEMA, NAMCs,
Prod & Maintenance)



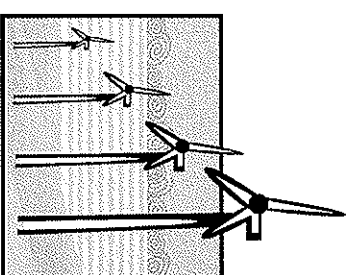
Conceive new ideas
and yokoten existing
ones



Go and see



Find ways to save



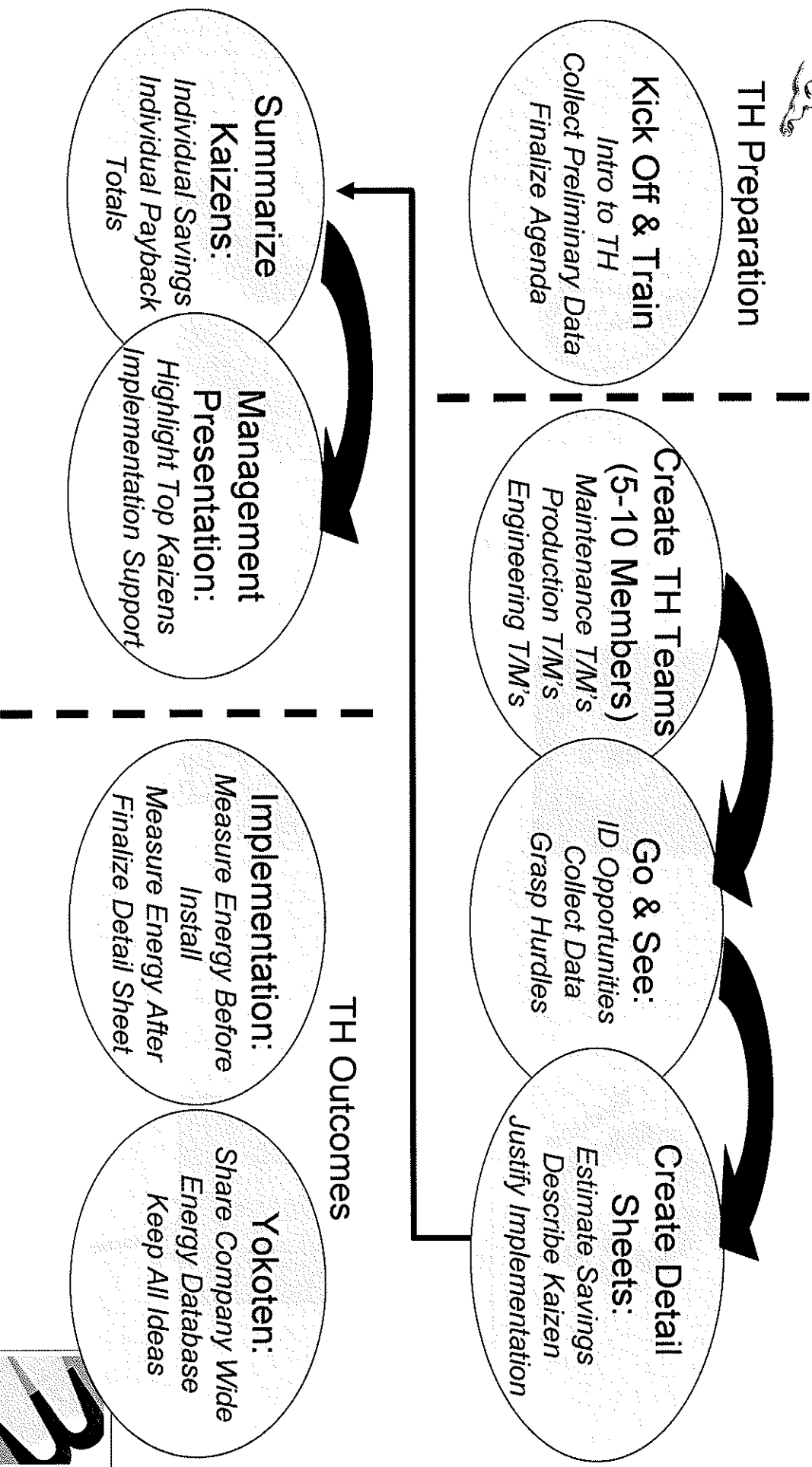
Identify energy use
in the workplace



Increase energy
awareness



Treasure Hunt Process Flow



Treasure Hunt Process

Day	Activity	Function	Location
Thursday	Kick Off Meeting	Review Event Details & Team Assignments Treasure Hunt Introduction Kaizen Detail Sheet Demonstration	Webex & Teleconference
Sunday	Observe Sleeping Facility Create Detail Sheets	Identify kaizen opportunities during weekend non production Enter plant and kaizen details into savings estimation tool (Kaizen Detail Sheet).	Host Supplier's Facility
Monday AM	Observe Facility Startup Observe Production Create Detail Sheets Observe Lunch Break	Identify kaizen equipment starting too early Identify operational energy opportunities Enter plant and kaizen details into savings estimation tool (Kaizen Detail Sheet). Identify equipment to turn off during lunch (between shift if applicable)	Host Supplier's Facility
Monday PM	Finish detail sheets Prepare Summary Presentation	Fill out detail sheets for remaining kaizens Refine detail sheets of Top Kaizens Summarize total opportunity Highlight Top 3-5 Kaizens	
Tuesday PM	Group Presentation	Teams present to all event attendees Focus as if acquiring management buy-in	Webex & Teleconference
Future	Follow up	Implementation update Yokoten opportunities	Website & Email

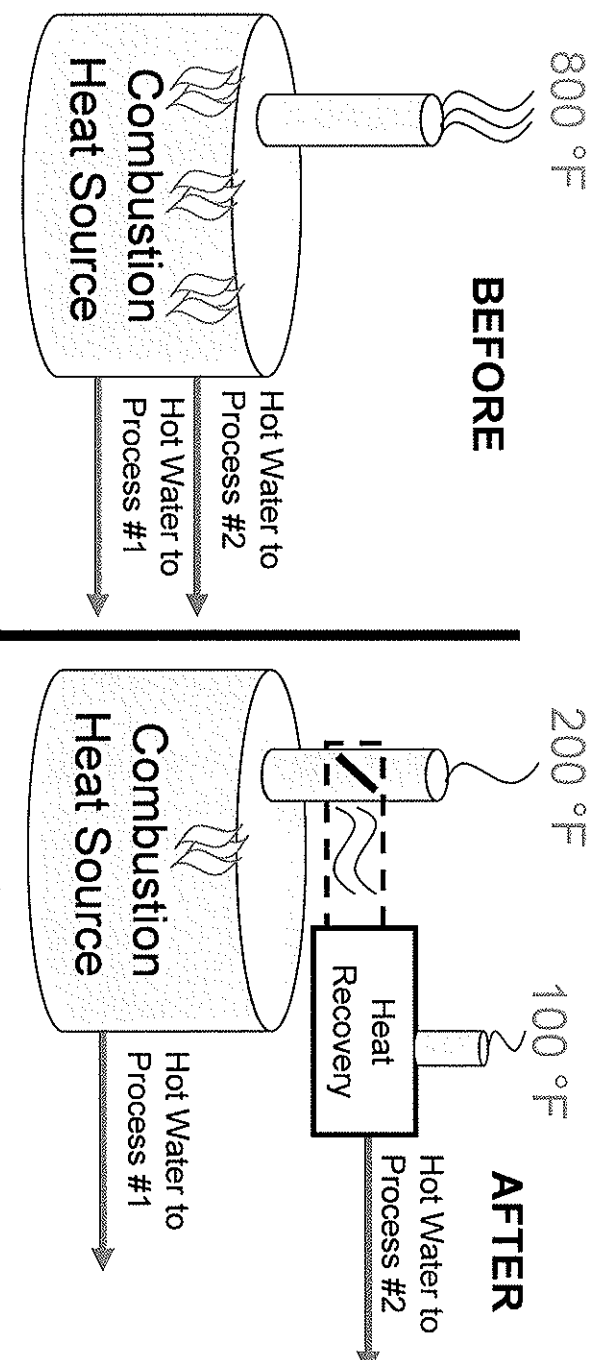


Examples of Energy Opportunities

Quick Tips:

- Use variable-speed drives for large variable loads
- Stagger large equipment start up / consider running off peak
- Maintain proper burner tuning
- Optimize outside air and ventilation flows
- Use meters to detect abnormal consumption
- Take advantage of utility company rebates

Examples of Energy Opportunities

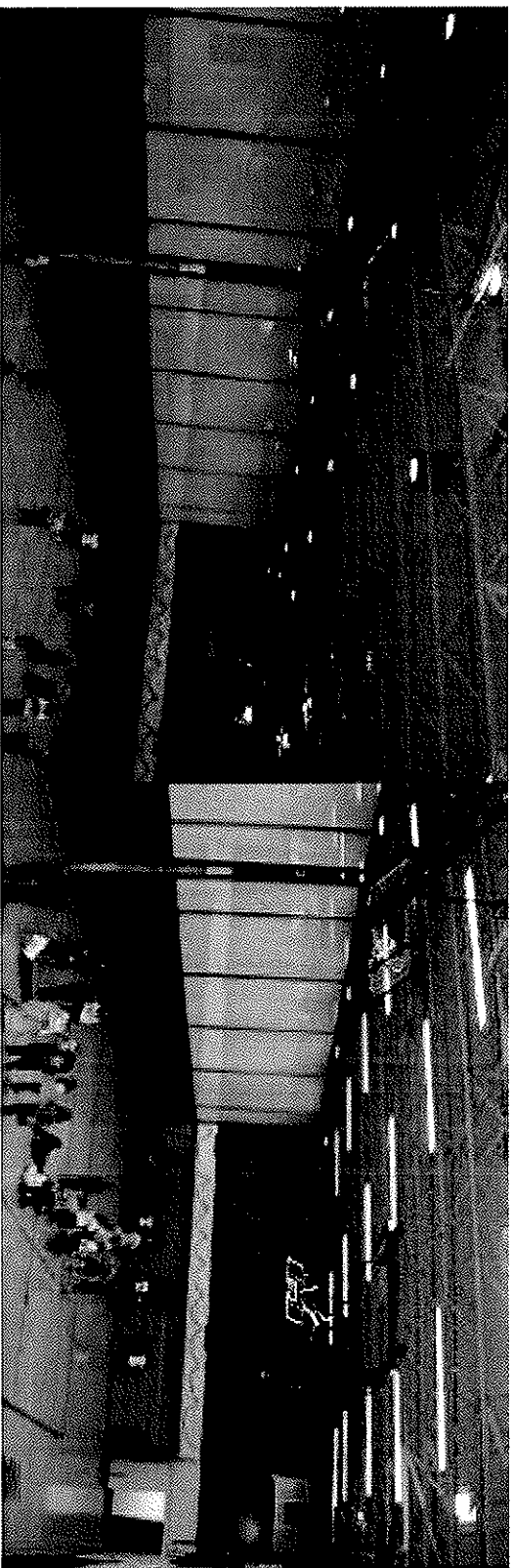




Examples of Energy Opportunities

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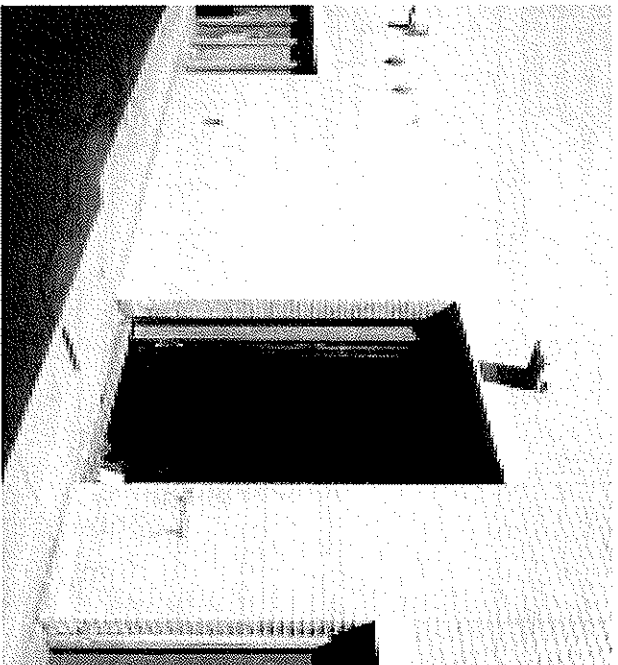
EFFICIENT FLUORESCENT LIGHTING



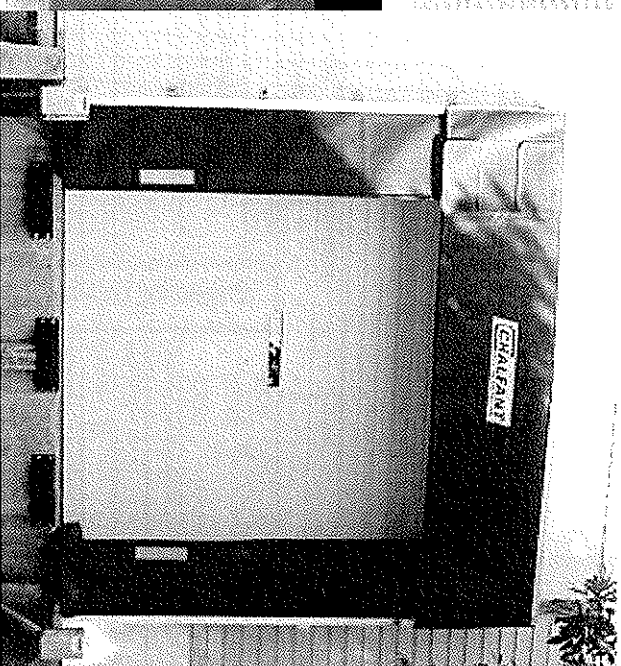


Examples of Energy Opportunities

ENERGY WASTED



ENERGY EFFICIENT





Kaizen Detail Sheet

Our internal tool to evaluate an energy saving idea and share best practices

1	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ	BA	BB	BC	BD	BE	BF	BG	BH	BI	BJ	BK	BL	BM	BN	BO	BP	BQ	BR	BS	BT	BU	BV	BW	BX	BY	BZ	CA	CB	CC	CD	CE	CF	CG	CH	CI	CJ	CK	CL	CM	CN	CO	CP	CQ	CR	CS	CT	CU	CV	CW	CX	CY	CZ	DA	DB	DC	DD	DE	DF	DG	DH	DI	DJ	DK	DL	DM	DN	DO	DP	DQ	DR	DS	DT	DU	DV	DW	DX	DY	DZ	EA	EB	EC	ED	EE	EF	EG	EH	EI	EJ	EK	EL	EM	EN	EO	EP	EQ	ER	ES	ET	EU	EV	EW	EX	EY	EZ	FA	FB	FC	FD	FE	FF	FG	FH	FI	FJ	FK	FL	FM	FN	FO	FP	FQ	FR	FS	FT	FU	FV	FW	FX	FY	FZ	GA	GB	GC	GD	GE	GF	GG	GH	GI	GJ	GK	GL	GM	GN	GO	GP	GQ	GR	GS	GT	GU	GV	GW	GX	GY	GZ	HA	HB	HC	HD	HE	HF	HG	HH	HI	HJ	HK	HL	HM	HN	HO	HP	HQ	HR	HS	HT	HU	HV	HW	HX	HY	HZ	IA	IB	IC	ID	IE	IF	IG	IH	II	IJ	IK	IL	IM	IN	IO	IP	IQ	IR	IS	IT	IU	IV	IW	IX	IY	IZ	JA	JB	JC	JD	JE	JF	JG	JH	JI	JJ	JK	JL	JM	JN	JO	JP	JQ	JR	JS	JT	JU	JV	JW	JX	JY	JZ	KA	KB	KC	KD	KE	KF	KG	KH	KI	KJ	KL	KM	KN	KO	KP	KQ	KR	KS	KT	KU	KV	KW	KX	KY	KZ	LA	LB	LC	LD	LE	LF	LG	LH	LI	LJ	LK	LL	LM	LN	LO	LP	LQ	LR	LS	LT	LU	LV	LW	LX	LY	LZ	MA	MB	MC	MD	ME	MF	MG	MH	MI	MJ	MK	ML	MM	MN	MO	MP	MQ	MR	MS	MT	MU	MV	MW	MX	MY	MZ	NA	NB	NC	ND	NE	NF	NG	NH	NI	NJ	NK	NL	NM	NN	NO	NP	NQ	NR	NS	NT	NU	NV	NW	NX	NY	NZ	OA	OB	OC	OD	OE	OF	OG	OH	OI	OJ	OK	OL	OM	ON	OO	OP	OQ	OR	OS	OT	OU	OV	OW	OX	OY	OZ	PA	PB	PC	PD	PE	PF	PG	PH	PI	PJ	PK	PL	PM	PN	PO	PP	PQ	PR	PS	PT	PU	PV	PW	PX	PY	PZ	QA	QB	QC	QD	QE	QF	QG	QH	QI	QJ	QK	QL	QM	QN	QO	QP	QQ	QR	QS	QT	QU	QV	QW	QX	QY	QZ	RA	RB	RC	RD	RE	RF	RG	RH	RI	RJ	RK	RL	RM	RN	RO	RP	RQ	RR	RS	RT	RU	RV	RW	RX	RY	RZ	SA	SB	SC	SD	SE	SF	SG	SH	SI	SJ	SK	SL	SM	SN	SO	SP	SQ	SR	SS	ST	SU	SV	SW	SX	SY	SZ	TA	TB	TC	TD	TE	TF	TG	TH	TI	TJ	TK	TL	TM	TN	TO	TP	TQ	TR	TS	TT	TU	TV	TW	TX	TY	TZ	UA	UB	UC	UD	UE	UF	UG	UH	UI	UJ	UK	UL	UM	UN	UO	UP	UQ	UR	US	UT	UU	UV	UW	UX	UY	UZ	VA	VB	VC	VD	VE	VF	VG	VH	VI	VJ	VK	VL	VM	VN	VO	VP	VQ	VR	VS	VT	VU	VV	VW	VX	VY	VZ	WA	WB	WC	WD	WE	WF	WG	WH	WI	WJ	WK	WL	WM	WN	WO	WP	WQ	WR	WS	WT	WU	WV	WW	WX	WY	WZ	XA	XB	XC	XD	XE	XF	XG	XH	XI	XJ	XK	XL	XM	XN	XO	XP	XQ	XR	XS	XT	XU	XV	XW	XX	XY	XZ	YA	YB	YC	YD	YE	YF	YG	YH	YI	YJ	YK	YL	YM	YN	YO	YP	YQ	YR	YS	YT	YU	YV	YW	YX	YZ	ZA	ZB	ZC	ZD	ZE	ZF	ZG	ZH	ZI	ZJ	ZK	ZL	ZM	ZN	ZO	ZP	ZQ	ZR	ZS	ZT	ZU	ZV	ZW	ZX	ZY	ZZ
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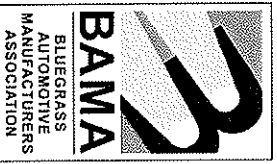
Presentation to Management

- Focus on top 3-5 kaizens
- Refine detail sheets for top kaizens (pictures, diagrams, review for accuracy)
- Highlight investment required and payback
- Start small, realize savings quickly
- Develop summary to capture full potential
- Keep all ideas for future (equipment replacement, next budget, etc.)



Last Year's Reflection

- 1) Energy Treasure Hunts:
 - ⇒ 4 Supplier Host Events
 - ⇒ TMMK Event with Local Suppliers
 - ⇒ TMMTX Event with On Site Suppliers
- 2) BAMA Learning Conference Workshop
- 3) Energy Footprint

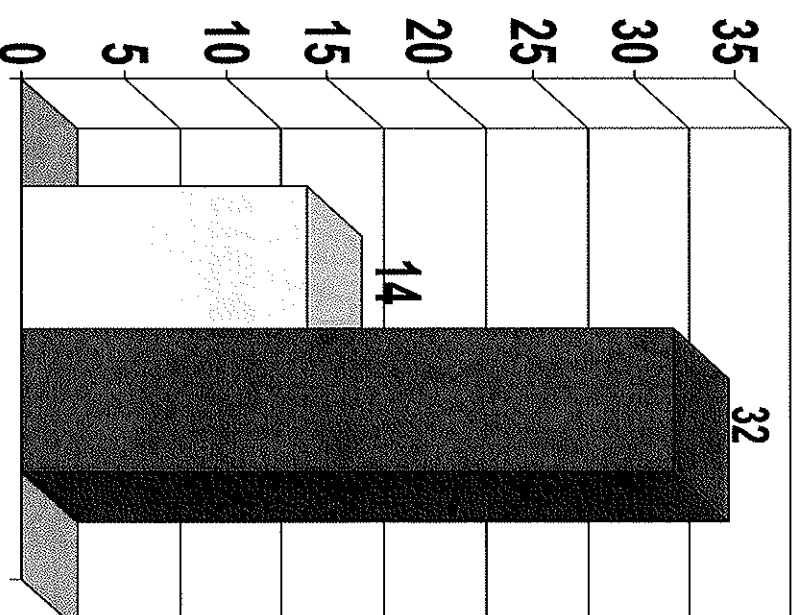




Last Year's Reflection

1) Energy Treasure Hunt Summary:

- 6 Total Events
- 14 Supplier facilities treasure hunted
- Concept shared with 32 Suppliers
- Over 200 Kaizen Opportunities:
 - 77,000 MMBTU
 - 9000 Mtons of CO2



□ Suppliers TH
■ Suppliers Trained





Last Year's Reflection

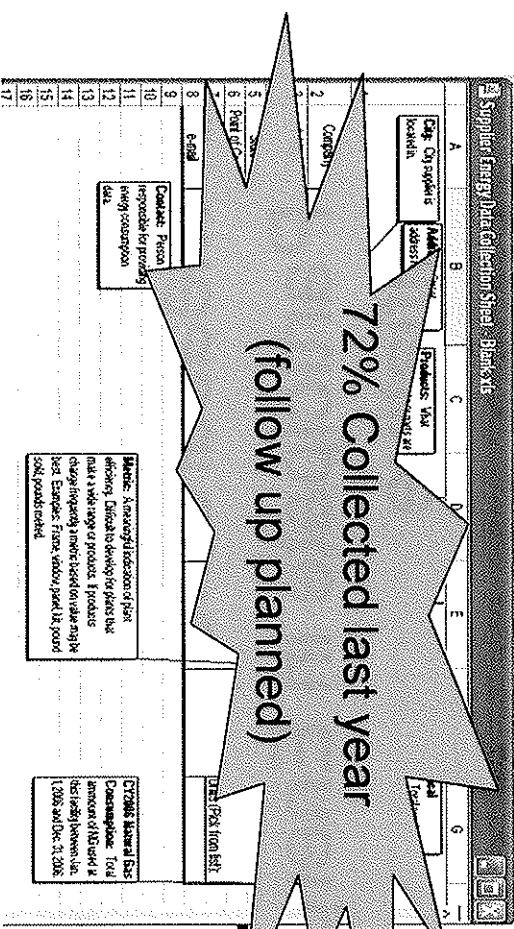
2) BAMA Learning Conference:

- Two regions of suppliers teamed up to present their TH learning experience
- Presentation included:
 - Actual treasure hunts results
 - Examples of successful implementation
 - Energy savings quiz
 - Energy consumption video

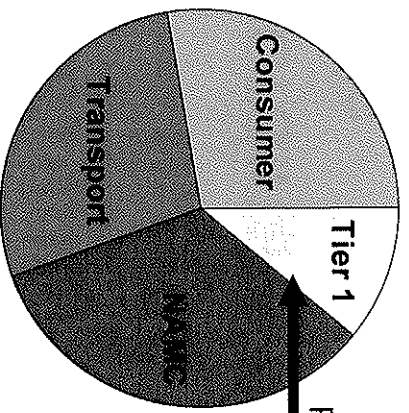


Last Year's Reflection

3) Energy Footprint:



Product CO2 Lifecycle*



Provide to big picture
Summarize Data

BAMA Website

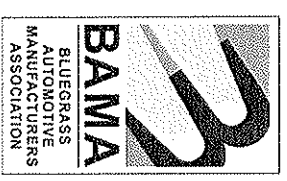
Web Survey

|

New for This Year

(Completed by
attending suppliers)

* Example for display, Not Actual





Current Activity Plan & Results

- Coordinate 4 Regional supplier treasure hunts
- Provide energy technical support
- Assist in development of energy measurements
- Participate in Energy Star® Supply Chain Initiative
- Introduce energy procurement strategies

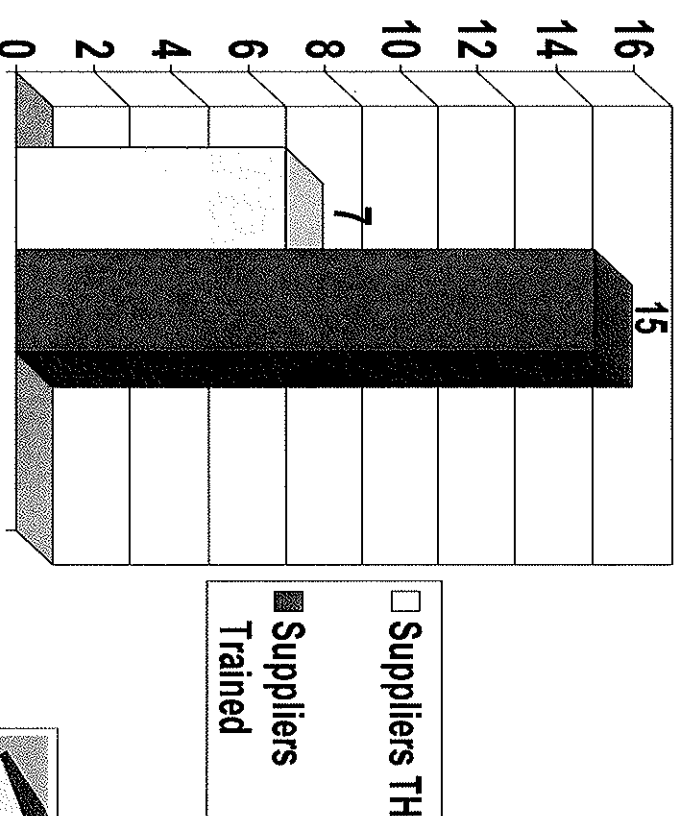




Current Activity Plan & Results

Event #1 Summary (July 2008):

- 7 Supplier facilities participated as hosts
- 8 Additional Suppliers attended for the learning opportunity
- 85 Kaizen Opportunities:
 - 36,000 MMBTU
 - 5000 M tons of CO2
- CO2 data collected (20% done)

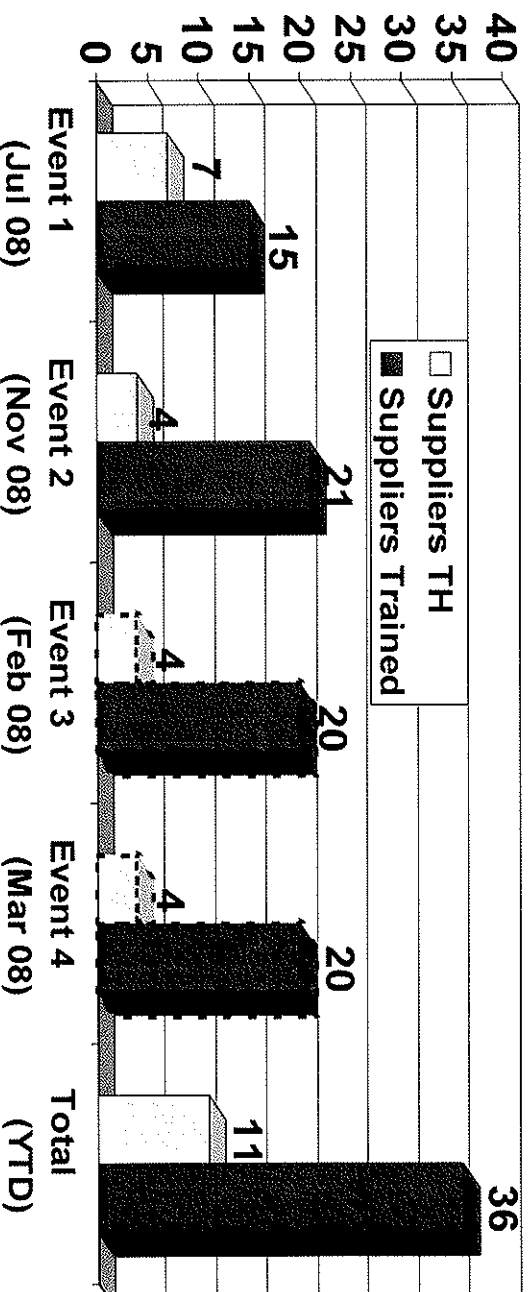




Current Activity Plan & Results

Plan for Remainder of year:

- Event 2 set for November 16th & 17th
 - Improved format using Event 1 reflection
- Event 3 & 4 dates planned

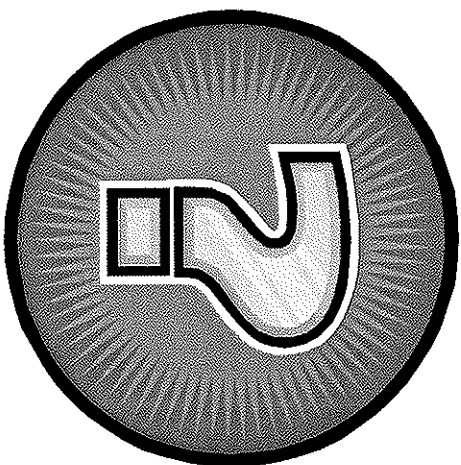




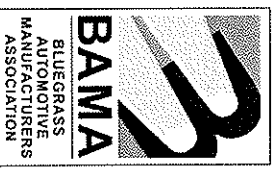
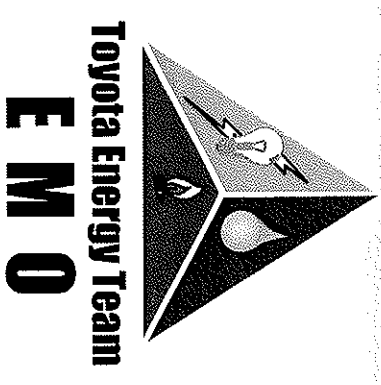
Summary

- 2 more Supplier treasure hunts planned through March 2009
- Share best practices
- Focus on continuous improvement
- Reduce energy and CO2

**Remember: If you can't measure it
you can't manage it!**



Only Use What you Need,
When you Need it,
In the Amount Needed!





Thank You!

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